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09/955,527	09/17/2001	Ebrahim Hashemi	SUN-P6488	8582

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EXAMINER	
PUENTE, EMERSON C	

ART UNIT	PAPER NUMBER
2113	3

DATE MAILED: 04/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/955,527	Applicant(s) HASHEMI, EBRAHIM	
	Examiner Emerson C Puente	Art Unit 2113	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 September 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,6-10,15-17,20 and 21* is/are rejected.

7)☒ Claim(s) *4,5,11-14,18 and 19* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 2.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claims 3,13, and 17 are objected to because of the following informalities:

Claims 3 and 17 objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The limitation "dynamically creating said new array having data redundancy in said plurality of arrays that is optimized for performance" does not further limit the respective parent claims.

Claim 13 discloses parts c, d, and e. Parts c, d, and e are already present in claim 12, which claim 13 is dependent upon. Please change parts c, d, and e to f, g, and h, respectively, in claim 13.

Appropriate correction is required

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this

subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, 6-10, 15-17, and 20-21 are rejected under 35 U.S.C. 102(**a or e**) as being anticipated by US Patent No. 6,154,853 of Kedem.

In regards to claim 1 and 15, Kedem discloses:

a plurality of disk drives comprising spare disks (see figure 5 and 6);

an array controller comprising a processor, and a memory wherein said memory contains instructions (see figure 2 and column 3 lines 15-20) that when executed implement a method a method comprising:

a) grouping a plurality of disk drives into a plurality of arrays having data redundancy to optimize performance (see figure 6); and

b) for every failure of one of said plurality of arrays due to a failed disk drive, dynamically creating a new array having data redundancy in said plurality of arrays and that is optimized for performance, said new array containing information from said failed disk drive (see column 6 lines 15-35).

In regards to claims 2 and 16, Kedem discloses:

b1) upon failure of a first array in said plurality of arrays due to said first failed disk drive, dynamically choosing a second array in said plurality of arrays that has the smallest number of disk drives as between the remaining arrays, said second array having redundancy (see column 6 lines 15-35);

b2) combining disk drives from said first array, excluding said first failed disk drive, with disk drives from said second array to dynamically form said new array in a RAID configuration having data redundancy in said plurality of arrays (see column 6 lines 15-35).

In regards to claims 3 and 17, Kedem discloses:

dynamically creating said new array having data redundancy in said plurality of arrays that is optimized for performance (see figure 6 and column 6 lines 15-35).

In regards to claims 6 and 20, Kedem discloses

maximizing the number of arrays in said plurality of arrays that are mirrored pairs of disk drives (see figure 6 and column 6 lines 15-35).

In regards to claims 7 and 21, Kedem discloses:

maximizing the number of arrays in said plurality of arrays that are arrays in a RAID configuration of three disk drives having redundancy. Kedem discloses a mirror configuration, which is equivalent to a RAID 1 configuration (see figure 6 and column 6 lines 15-35).

In regards to claim 8, Kedem discloses:

a) grouping a plurality of disk drives into a plurality of arrays having data redundancy to optimize performance, including a first and second array (see figure 6 and column 6 lines 15-35);

b) upon failure of said first array due to a first failed disk drive, dynamically combining disk drives from said first array, excluding said first failed disk drive, with disk drives from said second array to form a first new array having data redundancy in said plurality of arrays(see column 6 lines 15-35).

In regards to claim 9, Kedem discloses:

maximizing the number of arrays in said plurality of arrays that are mirrored pairs of disk drives (see figure 6 and column 6 lines 15-35).

In regards to claim 10, Kedem discloses:

providing the optimum performance combination as between arrays of mirrored pairs of disk drives, arrays in a RAID configuration of three disk drives having redundancy and arrays in a RAID configuration having more than three disk drives having redundancy in said plurality of arrays. Kedem discloses a mirror configuration, which is equivalent to a RAID 1 configuration (see figure 6 and column 6 lines 15-35)..

Claims 1, 3, 6, and 7-10, 15, 17, and 20-21 are rejected under 35 U.S.C. 102(**b**) as being anticipated by US Patent No. 6,079,029 of Iwatani et al. referred hereinafter "Iwatani".

In regards to claim 1 and 15, Iwatani discloses:

a plurality of disk drives comprising spare disks (see figure 6);

an array controller comprising a processor, and a memory wherein said memory contains instructions (see figure 2 item 10) that when executed implement a method a method comprising:

a) grouping a plurality of disk drives into a plurality of arrays having data redundancy to optimize performance (see figure 5 and column 16 lines 5-15); and

b) for every failure of one of said plurality of arrays due to a failed disk drive, dynamically creating a new array having data redundancy in said plurality of arrays and that is optimized for performance, said new array containing information from said failed disk drive. Iwatani discloses forming a new array comprising of device 16-00 and 16-31 when device 16-01 in logic group 15-0 (first array) has failed, wherein device 16-31 in a logic group of higher redundancy replaces the failed device 16-01 (see figure 6 and column 16 lines 40-50).

In regards to claims 3 and 17, Iwatani discloses:

dynamically creating said new array having data redundancy in said plurality of arrays that is optimized for performance (see figure 6 and column 16 lines 40-50).

In regards to claims 6 and 20, Iwatani discloses

maximizing the number of arrays in said plurality of arrays that are mirrored pairs of disk drives (see figure 5 and column 6 lines 5-15).

In regards to claims 7 and 21, Iwatani discloses:

maximizing the number of arrays in said plurality of arrays that are arrays in a RAID configuration of three disk drives having redundancy (see figure 5 and column 16 lines 5-15).

In regards to claim 8, Iwatani discloses:

a) grouping a plurality of disk drives into a plurality of arrays having data redundancy to optimize performance, including a first and second array (see figure 5 and column 16 lines 5-15);

b) upon failure of said first array due to a first failed disk drive, dynamically combining disk drives from said first array, excluding said first failed disk drive, with disk drives from said second array to form a first new array having data redundancy in said plurality of arrays. Iwatani discloses forming a new array comprising of device 16-00 and 16-31 when device 16-01 in logic group 15-0 (first array) has failed, wherein device 16-31 in a logic group of higher redundancy (second array) replaces the failed device 16-01 (see figure 6 and column 16 lines 40-50).

In regards to claim 9, Iwatani discloses:

maximizing the number of arrays in said plurality of arrays that are mirrored pairs of disk drives (see figure 5 and column 16 lines 5-15).

In regards to claim 10, Iwatani discloses:

providing the optimum performance combination as between arrays of mirrored pairs of disk drives, arrays in a RAID configuration of three disk drives having redundancy and arrays in a RAID configuration having more than three disk drives having redundancy in said plurality of arrays (see figure 5 and column 16 lines 5-15).

Allowable Subject Matter

Claims 4,5,11-14,and 18-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

See Form PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emerson C Puente whose telephone number is (703) 305-8012. The examiner can normally be reached on 8-5 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert W Beausoliel can be reached on (703) 305-9713. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-5631.

Emerson Puente
4/22/04

ROBERT BEAUSOLIEL
SUPERVISORY PATENT EXAMINER
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